



## WINDING DEVICE OF WINDING WHEEL AND WIRE

### BACKGROUND OF THE INVENTION

#### (a) Field of the Invention

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The invention relates to a winding device of a winding wheel and a wire (signal wire) and more particularly, to a winding device, wherein when two ends of a signal wire are pulled out from surfaces of a turning wheel thereof by pulling force, shear force at connecting portions of the signal wire and the wheel surface does not result, thereby preventing damage to wire surfaces or conductive wires by eliminating stiff friction between the signal wire and the connecting portions.

#### (b) Description of the Prior Art

FIG. 6 shows a typical winding device, "USB Transmission Cable having Cable Winding Mechanism" disclosed by Taiwan Patent Publication No. 529819, the invention comprises an rotatable turning wheel A flexibly connected to a fixed shaft B, and a spring C having an inner end thereof fastened to the fixed shaft B and an outer end thereof fastened to a wall surface of the rotatable turning wheel A. The turning wheel A has an encircling groove A1 at inner walls thereof, and two wedge apertures A2 and A3 at a wheel surface thereof. A continuous signal wire W has a middle section thereof placed in the groove A1, and left and right wires W1 and W2 thereof stretched out via the wedge apertures A2 and A3 and are wound on an outer wheel surface of the turning wheel A in reverse 5 directions. When the left and right wires W1 and W2 are extracted, the turning wheel A is rotated relative to the fixed shaft B as a center of rotation thereof, with the left and right wires W1 and W2 being pulled out by the same lengths. However, wires that are pulled using such method in the long run are prone to the following drawbacks:

1. Referring to FIGS. 7 and 8, when the left wire W1 (or the right wire W2) is fully pulled out due to friction (shear force) at edges of the wedge apertures A2 and A3, contact portions A5 and A6 of the left and right wires W1 and W2 and end portions of the wedge apertures A2 and A3 are abraded and worn. In the long run, the left and right wires W1